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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/897,953	07/24/1997	HIDEHIKO KIRA	950107A	5157

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EXAMINER

GRAYBILL, DAVID E

ART UNIT PAPER NUMBER

2822

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

08/897,953

Applicant(s)

KIRA ET AL.

Examiner

David E. Graybill

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5,6,8-10 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5,6,8-10 and 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9-11-6 has been entered.

In the rejections infra, generally, reference labels are recited only for the first recitation of identical claim elements.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 5, 6, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, Maeda (English translation, JP58-180091), and Koga (JP4302444).

In the instant specification, at page 1, line 23 to page 2, line 22, applicant teaches as conventional a process comprising the steps of forming leveled projection electrode studs 14 on a semiconductor chip 11 by wire-bonding; forming conductive adhesive 16a on the electrodes by a conductive adhesive 16 that has been skidded on a plate 15a and then transcribed onto the electrodes; applying a thermosetting insulating adhesive 18 to areas of mounting parts where the chip is to be mounted on a substrate 17; aligning the chip to the mounting parts at a first stage and performing a first fixing of the chips with a first pressure by a bonding head to which the chip is absorbed; and thereafter, heating the substrate on which the chip is fixed with a thermosetting temperature of the adhesive.

However, applicant does not appear to explicitly teach as conventional a process comprising a plurality of chips, and the steps of heating the adhesive on the substrate with a half-thermosetting temperature so as to harden the adhesive on the substrate to a half-thermosetting state by heating means; moving the substrate to a second stage, while the chips on

the substrate are held at their position by the half-thermosetting state of the adhesive; and thereafter, heating at the second stage the substrate on which the chips are fixed.

Nonetheless, Maeda teaches this process at page 2, lines 19-20; page 3, line 22 to page 4, last line; page 6, antepenultimate paragraph to page 8, line 3; and page 9, first full paragraph. Moreover, it would have been obvious to combine the process of Maeda with the process of applicant's admitted prior art because it would enable accurate alignment of plural chips before the final fixing step of the conventional art.

Further, the combination of applicant's admitted prior art and Maeda does not appear to explicitly teach the plurality of semiconductor chips being pressed simultaneously in the second fixing, and wherein in the heating step (e) while heating the adhesive on the mounting parts a pressure is applied to the chips.

Nevertheless, in the English abstract and figures, Koga teaches a process comprising the plurality of semiconductor chips being pressed simultaneously in the second fixing, and wherein in a heating step while heating an adhesive on mounting parts a pressure is applied to the chips. Furthermore, it would have been obvious to combine the process of Koga with the process of the applied prior art because it would facilitate bonding.

Also, the combination of applied prior art does not appear to explicitly teach a process wherein the second pressure is greater than the first pressure.

Regardless, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed relative pressure because, as cited, the combination of the applied prior art teaches that a first and second pressure are result effective variables, and applicant has not disclosed that the limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears prima facie that the process would possess utility using another relative pressure. Indeed, it has been held that optimization of range limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical.

Although the applied prior art does not appear to explicitly disclose the limitation, "so that a dispersion of a degree of collapse of the plurality of projection electrodes may be absorbed," this limitation is a statement of intended use of the process that does not appear to result in a manipulative difference between the claimed process and the process of the applied prior art. Further, because the process of the applied prior art appears to be the

same as the claimed process, it appears to be capable of being practiced for the intended use, and the statement of intended use does not patentably distinguish the claimed process from the process of the applied prior art. See *Minton v. Nat 'l Ass 'n of Securities Dealers, Inc.*, 336 F.3d 1373, 1381, 67 USPQ2d 1614, 1620 (Fed.Cir. 2003)); *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976); *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). Indeed, in the specification, page 10, lines 4-6, applicant discloses that the mere practice of the claimed process wherein the second pressure is set larger than the first pressure enables the intended use of the process.

Claims 5, 6, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, Maeda and Koga as applied to claims 5, 6, 8 and 15 *supra*, and further in combination with Sakata (JP4-62946).

Applicant's admitted prior art, Maeda and Koga do not appear to explicitly teach a process wherein the second pressure is greater than the first pressure.

Notwithstanding, in the English abstract, partial translation, and figures, Sakata teaches this process. Furthermore, it would have been obvious to combine the process of Sakata with the applied prior art because it would enhance production yield.

To further clarify, Sakata teaches that the first pressure is 20 kg/cm<sup>2</sup> and the second pressure is about 20 kg/cm<sup>2</sup>, and the range encompassed by the phrase "about 20 kg/cm<sup>2</sup>" encompasses a pressure greater than the first pressure of 20 kg/cm<sup>2</sup>.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, Maeda and Koga, as applied to claims 5, 6, 8 and 15, and further in combination with DiStefano (5548091).

Applicant's admitted prior art, Maeda and Koga do not appear to explicitly teach a process comprising wherein, in the heating step (c), heating the adhesive is performed by a heat plate on which the substrate is placed.

Nonetheless, at column 9, lines 3-63, DiStefano teaches a process comprising wherein in a heating step, heating an adhesive is performed by a heat plate 58 on which a substrate mounting chips is placed. In addition, it would have been obvious to combine the process of DiStefano with the process of the applied prior art because, both processes are directed to the same purpose of heating an adhesive, and it would facilitate adhesive curing.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, Maeda, Koga and Sakata, as applied to claims 5, 6, 8 and 15, and further in combination with DiStefano (5548091).



DiStefano is applied for the same reasons it is applied supra.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, Maeda and Koga as applied to claims 3, 5, 6, 8 and 15, and further in combination with Fujimoto (55480915115545).

Applicant's admitted prior art, Maeda and Koga do not appear to explicitly teach a process comprising a heat block having a plurality of pressing/heating heads each of which is provided on the heat block corresponding to the mounting parts of the substrate.

Notwithstanding, as cited, Koga teaches a process comprising a heat block 25 having a plurality of pressing/heating portions each of which is provided on the heat block corresponding to the mounting parts of the substrate. Further, at column 6, line 52 to column 7, line 3, Fujimoto teaches a single bonding head 52 for each chip. Moreover, it would have been obvious to combine the process of Fujimoto and the process of Koga by providing the heat block 25 with a single head for each chip because it would enable a pressing force to act evenly on each chip. Furthermore, it would have been obvious to combine the heat block of Fujimoto and Koga with the applied prior art because it would facilitate bonding.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, Maeda, Koga and Sakata as applied to claims 5, 6, 8 and 15, and further in combination with Fujimoto (5115545).

Fujimoto is applied for the same reasons it is applied supra.

Applicant's amendment and remarks filed 9-12-6 have been fully considered and are treated supra and infra.

Applicant proffers, "Sakata discloses that each of the first pressure and a second pressure is approximately 20 kg. It is therefore clear that Sakata teaches that the first and second pressures are substantially the same. Accordingly, it is respectfully submitted that Sakata fails to teach that the second pressure is greater than the first pressure, as claimed in the present invention."

This proffer is respectfully traversed because the alleged disclosure that the first and second pressures are substantially the same would not be tantamount to a failure to disclose that the second pressure is greater than the first pressure because the scope of such an alleged disclosure would encompass a disclosure that the second pressure is greater than the first pressure. In any case, as elucidated in the rejection, Sakata explicitly discloses that the second pressure is greater than the first pressure.

In addition, appellant alleges particular advantages for the instant claimed invention. Regardless, it is respectfully submitted that reasons for,

or advantages resulting from, doing what the applied prior art has suggested, is not demonstrative of nonobviousness. In re Kronig 190 USPQ 425, 428 (CCPA 1976); In re Lintner 173 USPQ 560 (CCPA 1972). Indeed, the prior art teaches the claimed invention; therefore, the alleged reason or advantage is an inherent result of the prior art process. Furthermore, the prior art motivation or advantage may be different than that of applicant while still supporting a conclusion of obviousness. In re Wiseman 201 USPQ 658 (CCPA 1979); Ex Parte Obiaya 227 USPQ 58 (Bd. of App. 1985). Moreover, as elucidated in the rejections, the applied prior art discloses the claimed process; therefore, the alleged particular advantages would be an inherent result of the practice of the process of the applied prior art.

**For information on the status of this application applicant should check PAIR:** Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.**

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.  
The fax phone number for group 2800 is (571) 273-8300.

Art Unit: 2822

A handwritten signature in black ink, appearing to read 'D. E. Graybill', written in a cursive style.

David E. Graybill  
Primary Examiner  
Art Unit 2822

D.G.

23-Dec-06